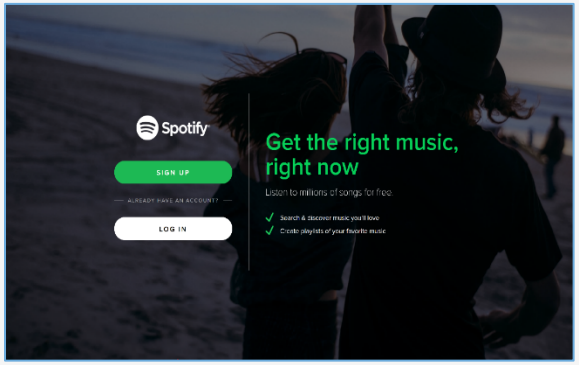
BLUE SPIKE

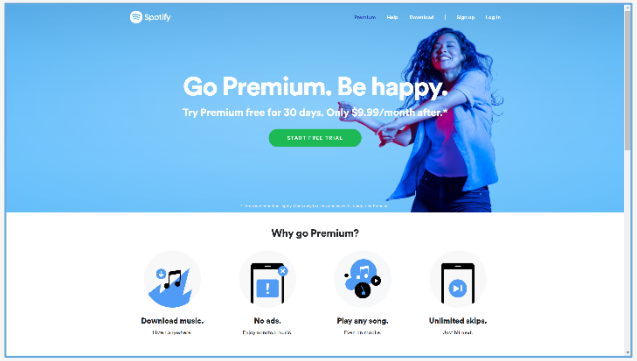
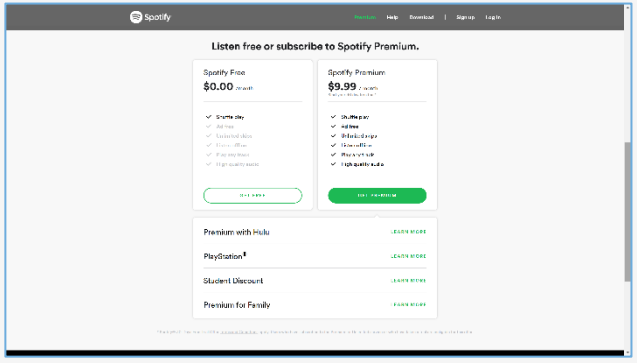
Ex. D. Infringement Chart for Claim 6 of the ’506 Patent

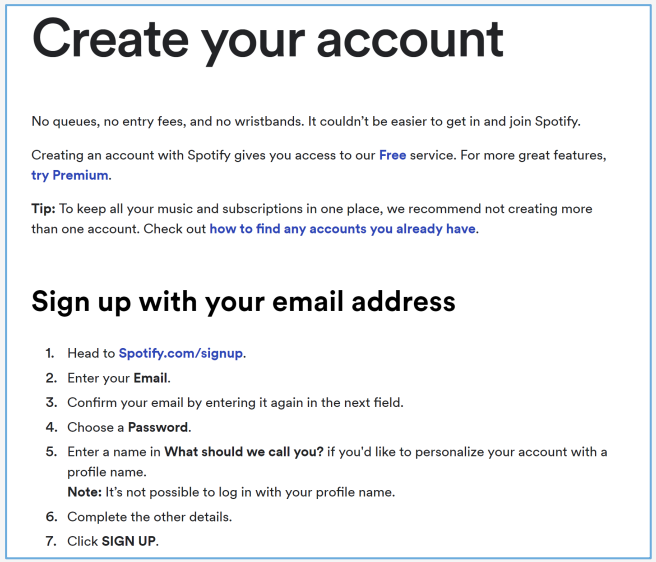
SPOTIFY

PATENT DETAILS

U.S. Patent No. 7,813,506	System and methods for permitting open access to data objects and for securing data within the data objects
ISSUE DATE : October 12, 2010 **FILING DATE :** March 30, 2009 **INVENTOR :** Scott A. Moskowitz; Mike W. Berry	ABSTRACT: A system and methods for permitting open access to data objects and for securing data within the data objects is disclosed. According to one embodiment of the present invention, a method for securing a data object is disclosed. According to one embodiment of the present invention, a method for securing a data object is disclosed. The method includes the steps of (1) providing a data object comprising digital data and file format information; (2) embedding independent data into a data object; and (3) scrambling the data object to degrade the data object to a predetermined signal quality level. The steps of embedding and scrambling may be performed until a predetermined condition is met. The method may also include the steps of descrambling the data object to upgrade the data object to a predetermined signal quality level, and decoding the embedded independent data. The additional steps of descrambling and decoding may be performed until a predetermined condition is met. The predetermined condition may include, for example, reaching a desired signal quality of the data object.

CLAIM 6	SPOTIFY
6. A method for distributing accessible digital content, comprising:	*Spotify offers a method for distributing digital content through their premium media streaming services which can be played on any device. More specifically, Spotify uses a digital rights management system to encrypt the music content which is playable through the Spotify app only. For instance, to play the encrypted music on web browser, Spotify utilizes Encrypted Media Extensions. Spotify uses Google Widevine CDM to enable instant streaming on consumer devices, such as Chrome Browser on Desktop, Firefox Browser on Desktop, Chromecast, Android TVs etc.*   *See* Exhibit 1, p. 1, Spotify Web page (Date Accessed 04/27/2018), available at https://open.spotify.com/browse *See* Exhibit 2, "Discover and stream music across all your devices with Spotify _ FileHippo News" webpage (Date Accessed 04/27/2018), available at https://news.filehippo.com/2016/12/discover-and-stream-music-across-all-your-devices-with-spotify/

CLAIM 6	SPOTIFY
6. A method for distributing accessible digital content, comprising:	*Spotify offers Digital Rights Management to offer protection against illegal songs downloads through Encrypted Media Extensions (EME). It offers a freemium service to conduct trusted transactions between the user and the Spotify server. The subscription to Spotify allows playback of songs only through Web player or the application and cannot be accessed beyond them.*   *See* Exhibit 3, p. 1 & 2, "Spotify Premium" webpage (Date Accessed 04/30/2018), available at https://www.spotify.com/us/premium/

CLAIM 6	SPOTIFY
6. A method for distributing accessible digital content, comprising:	

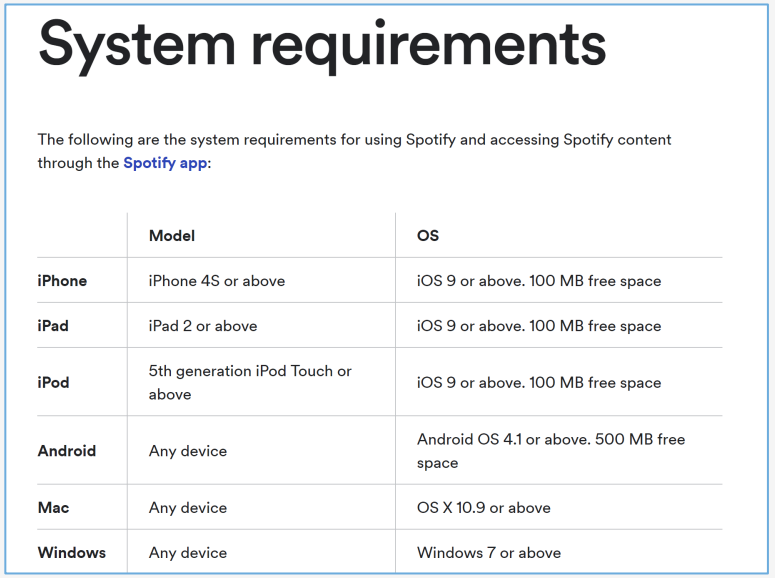
See Exhibit 4, p. 1, "Create your account - Spotify" webpage (04/30/2018), available at https://support.spotify.com/us/account_payment_help/account_basics/create-your-spotify-account/

> "**Spotify also plays through several sound systems, TVs, and car stereo systems**. Please contact your device's manufacturer to determine whether it supports Spotify and, if so, how to enable it.
>
> Note: **The Spotify app can vary across different devices and operating systems**. We recommend running the latest firmware on your device for the best experience."

See Exhibit 5, p. 1, "System requirements - Spotify" webpage (04/30/2018), available at https://support.spotify.com/dk/article/spotify-system-requirements/ (emphasis added)

CLAIM 6	SPOTIFY

6. A method for distributing accessible digital content, comprising:



System requirements

The following are the system requirements for using Spotify and accessing Spotify content through the Spotify app:

	Model	OS
iPhone	iPhone 4S or above	iOS 9 or above. 100 MB free space
iPad	iPad 2 or above	iOS 9 or above. 100 MB free space
iPod	5th generation iPod Touch or above	iOS 9 or above. 100 MB free space
Android	Any device	Android OS 4.1 or above. 500 MB free space
Mac	Any device	OS X 10.9 or above
Windows	Any device	Windows 7 or above

"**The web player**
The web player is supported by the following web browsers:

Chrome
Firefox
Edge
Opera

Spotify content may only be accessed with the Spotify app, the web player website, or apps otherwise authorized by Spotify."

See Exhibit 5, p. 1, "System requirements - Spotify" webpage (04/30/2018), available at https://support.spotify.com/dk/article/spotify-system-requirements/ (emphasis added)

CLAIM 6	SPOTIFY
6. A method for distributing accessible digital content, comprising:	*Upon information and belief, services like Spotify uses DRM for playback of the content.* "We **consume movies and music through services like** Netflix, **Spotify**, Pandora, Apple Music, etc., **often over the web**. **Netflix, et al. are obligated, due to agreements with content partners, to serve their content with DRM.** Moreover, web streaming is likely a significant chunk of usage for Netflix. This makes **the problem of enforcing DRM over the web an incredibly important problem for Netflix, et al. to solve**. That's where **EMEs come into play**. They are essentially **a technology that allows the browser to communicate with DRM systems over an encrypted medium.** They **make it possible for DRM software to work over the browser and relay encrypted content** to the user. This means **Netflix can serve you a movie that's encrypted and protected by DRM**." *See* Exhibit 6, p. 2, "The most controversial HTML5 extension – LogRocket" blog post (Date Accessed 05/01/2018), available at https://blog.logrocket.com/the-most-controversial-html5-extension-7adc66bbc291 (emphasis added)

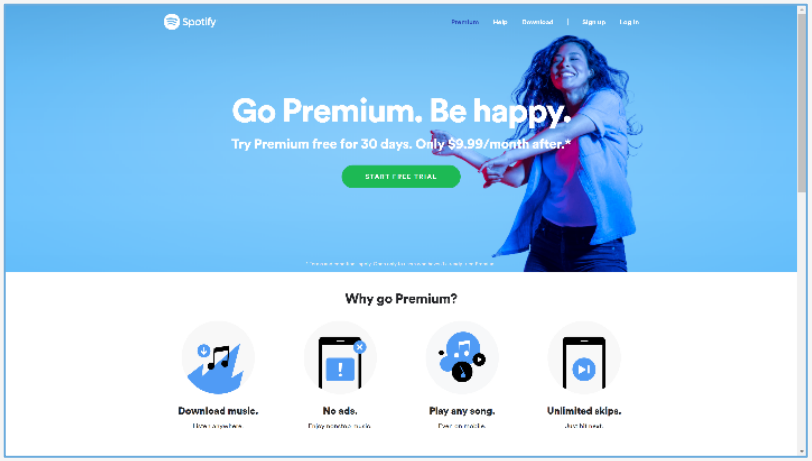
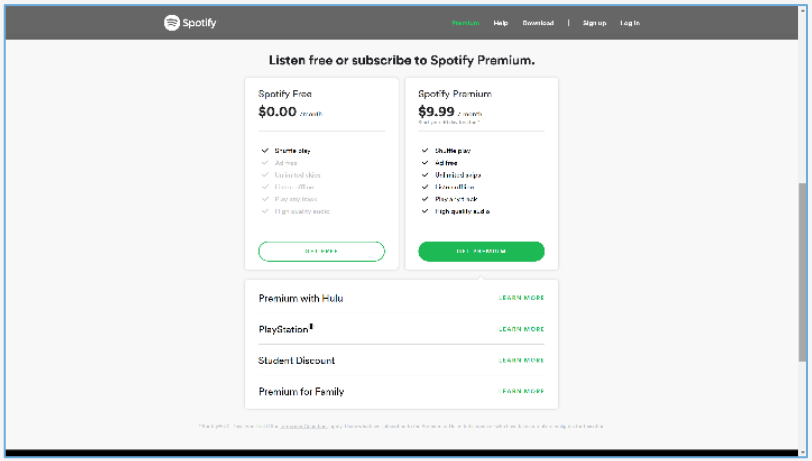
CLAIM 6	SPOTIFY
6. A method for distributing accessible digital content, comprising:	*Upon information and belief, like Felix, the DRM implemented in Spotify works similarly.* "Say **Felix is a movie streaming service that serves up movies over the browser and uses EMEs to protect the content it delivers**. Suppose that user wants to play some encrypted content from Felix. Here's what happens: **The browser will load up this content, realize it is encrypted and then trigger some Javascript code**. This **Javascript will take the encrypted content and pass it along to something called the Content Decryption Module (CDM)**—more on this later. **The CDM will then trigger a request that will be relayed by Felix to the license server**. This is a Felix-controlled server that determines whether or not a particular user is allowed to play a particular piece of content. **If the license server thinks our user can watch the content, it will send back a decryption key for the content to the CDM**. **The CDM will then decrypt the content and it will begin playing for the user**." The most important **chunk of this whole process is the CDM**. By its nature, the **CDM has to be a piece of code that's trusted by Felix**. If it isn't, Felix can't be sure that it will do what it wants it to. This means that the **CDM has to come with the browser**. There are a couple of different providers for CDMs, including **Google's Widevine** and Adobe Primetime. Both of these provide the **encryption support necessary for content providers such as Felix to enforce DRM**. *See* Exhibit 6, p. 2 & 3, "The most controversial HTML5 extension – LogRocket" blog post (Date Accessed 05/01/2018), available at https://blog.logrocket.com/the-most-controversial-html5-extension-7adc66bbc291 (emphasis added)

CLAIM 6	SPOTIFY
6. A method for distributing accessible digital content, comprising:	"Web Playback SDK Quick Start BETA Create a **simple web app with the Web Playback SDK that allows you to play an audio track inside your browser**. By using Spotify developer tools, you accept our Developer Terms of Service. They contain important information about what you can and can't do with our developer tools. Please read them carefully. Introduction **The Web Playback SDK is client-side JavaScript library which allows you to create a new player in Spotify Connect and play any audio track from Spotify in the browser via Encrypted Media Extensions**. You can read more about the SDK in the overview, or dig into the reference documentation. In this Quick Start, we will be adding the Web Playback SDK to a simple HTML page. Authenticating with Spotify **You will need an access token from your personal Spotify Premium account. Click the button below to quickly obtain your access token**." *See* Exhibit 7, p. 1, "Web Playback SDK Quick Start _ Spotify for Developers" webpage (Date Accessed 05/01/2018), available at https://beta.developer.spotify.com/documentation/web-playback-sdk/quick-start/ (emphasis added)

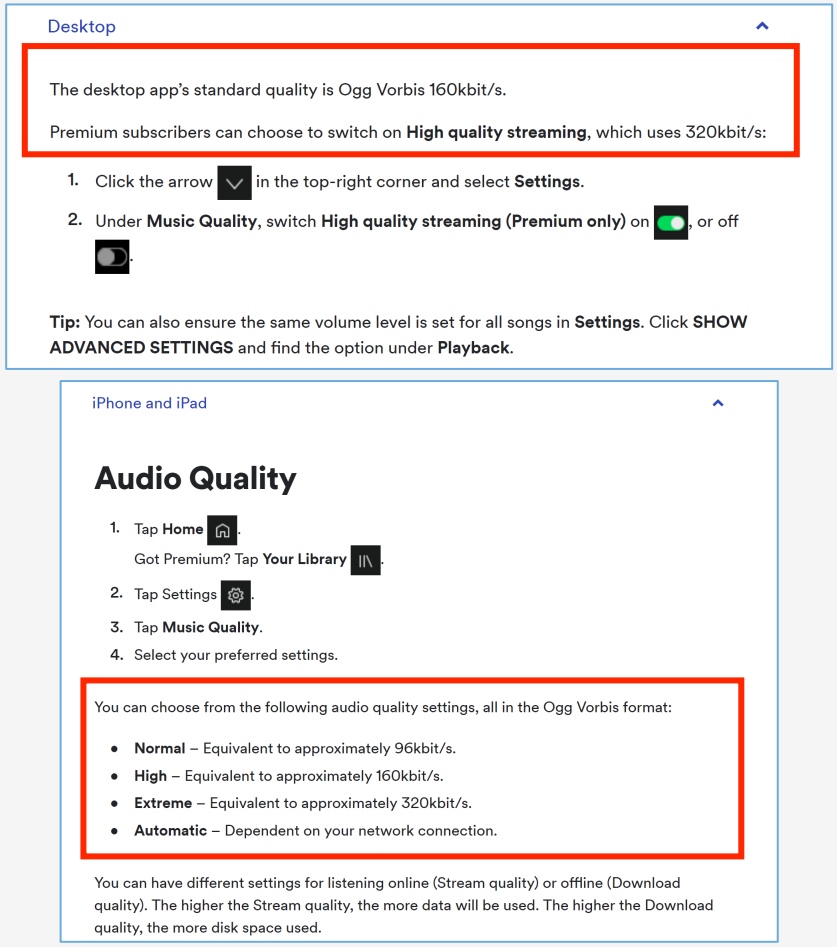
CLAIM 6	SPOTIFY
6. A method for distributing accessible digital content, comprising:	**"Encrypted Media Extensions provides an API that enables web applications to interact with content protection systems, to allow playback of encrypted audio and video**. EME is designed to **enable the same app and encrypted files to be used in any browser, regardless of the underlying protection system**. The former is made possible by the standardized APIs and flow while the latter is made possible by the concept of Common Encryption EME is an extension to the HTMLMediaElement specification — hence the name. Being an 'extension' means that browser support for EME is optional: if a browser does not support encrypted media, it will not be able to play encrypted media, but EME is not required for HTML spec compliance "EME implementations use the following external components: **Key System: A content protection (DRM) mechanism. EME doesn't define Key Systems themselves, apart from Clear Key (more about that below)**. **Content Decryption Module (CDM): A client-side software or hardware mechanism that enables playback of encrypted media. As with Key Systems, EME doesn't define any CDMs, but provides an interface for applications to interact with CDMs that are available**. **License (Key) server: Interacts with a CDM to provide keys to decrypt media. Negotiation with the license server is the responsibility of the application**. *continued on next slide.*

CLAIM 6	SPOTIFY
6. A method for distributing accessible digital content, comprising:	**Packaging service: Encodes and encrypts media for distribution/consumption**. Note that an application **using EME interacts with a license server to get keys to enable decryption**, but user identity and authentication are not part of EME. **Retrieval of keys to enable media playback happens after (optionally) authenticating a user. Services such as Netflix must authenticate users within their web application**: **when a user signs into the application, the application determines the user's identity and privileges**." *See* Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added) *Thus, this claim element is infringed literally, or in the alternative under the doctrine of equivalents.*

CLAIM 6	SPOTIFY
providing a digital content comprising digital data and file format information;	*Spotify provides digital content (online music streaming) through its web player and App. The music is available in Ogg Vorbis format. Upon information and belief, Spotify makes available 96 Kbps – 160 Kbps Music bitrate for Spotify Free customers (file format information) and up to 320 Kbps for Spotify Premium customers.* "Generally ou can only use Spotify to play offline music synced from Spotify. **The files are Ogg Vorbis format but encrtyped by Spotify, so no other media scanner will recognize them as music files**." *See* Exhibit 25, p. 2, "Solved_ Where does Spotify save the offline playlist files... - The Spotify Community" webpage (Date Accessed 05/07/2018), available at https://community.spotify.com/t5/Android/Where-does-Spotify-save-the-offline-playlist-files/td-p/6929 (emphasis added) "With **Spotify, it's easy to find the right music for every moment – on your phone, your computer, your tablet and more.** There are **millions of tracks on Spotify**. So **whether you're working out, partying or relaxing, the right music is always at your fingertips. Choose what you want to listen to, or let Spotify surprise you**. You can also browse through the music collections of friends, artists and celebrities, or create a radio station and just sit back. Soundtrack your life with Spotify. **Subscribe or listen for free**." *See* Exhibit 26, p. 1, "Contact - Spotify" webpage (Date Accessed 05/07/2018), available at https://www.spotify.com/us/about-us/contact/ (emphasis added)

CLAIM 6	SPOTIFY
providing a digital content comprising digital data and file format information;	  *See* Exhibit 3, p. 1 & 2, "Spotify Premium" webpage (Date Accessed 04/30/2018), available at https://www.spotify.com/us/premium/

CLAIM 6	SPOTIFY
providing a digital content comprising digital data and file format information;	"6. **Audio Quality: 160Kbps VS 320Kbps** On desktop, **default streaming audio quality for Spotify Free users is Ogg Vorbis 160kbit/s while Premium subscribers can choose to switch on High quality streaming, which uses 320kbit/s.** On iPhone, iPad or Android, Spotify Free users can choose either 96kbit/s or 160kbit/s while Premium subscribers have one more option which is 320kbit/s. As to streaming audio quality on Chromecast, it's AAC 128kbit/s for Spotify Free, and 256kbit/s for Spotify Premium." *See* Exhibit 27, p. 5, "Spotify Free VS Premium_ 6 Differences You Need to Know" webpage (Date Accessed 05/08/2018), available at http://www.tunemobie.com/resources/spotify-free-vs-premium-6-differences.html (emphasis added) **"AUDIO QUALITY** **Spotify uses three different quality settings for streaming, all in the Ogg Vorbis format. 96kbps is the standard bitrate for mobile, which then jumps to 160kbps for desktop and web player 'standard quality' and 'high quality' on mobile**. If you **pay the monthly fee for Spotify Premium, you'll get 320kbps which is 'high quality' on desktop and 'extreme quality' on mobile**." *See* Exhibit 28, p. 3, "Spotify Free vs Spotify Premium - Tech Advisor" webpage (Date Accessed 05/08/2018), available at https://www.techadvisor.co.uk/review/audio-and-music-software/spotify-free-vs-spotify-premium-3597766/ (emphasis added)

CLAIM 6	SPOTIFY
providing a digital content comprising digital data and file format information;	

See Exhibit 29, p. 1, "Audio settings - Spotify" webpage (Date Accessed 05/08/2018), available at https://support.spotify.com/is/article/high-quality-streaming/?ref=related

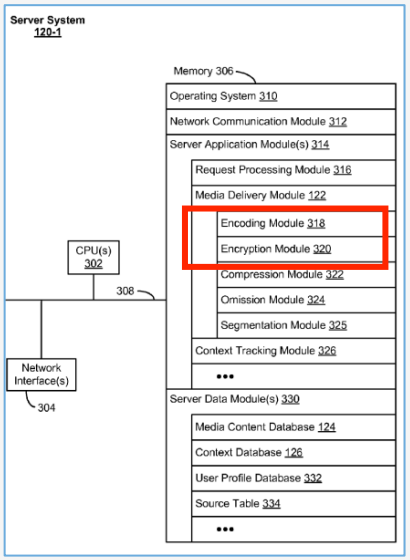
CLAIM 6	SPOTIFY
providing a digital content comprising digital data and file format information;	"In accordance with some implementations, **a method of providing media content** is disclosed herein. **The method is performed at a computer system** (e.g., a server system) with one or more processors and memory. **The method includes obtaining content-access information that enables distribution of content to a plurality of clients having different file format processing capabilities.** The method also includes **providing to a first client, having first file format processing capabilities, first information that enables the first client to access respective content in a first file format**." *See* Exhibit 30, at Col. 2:49-58, "U.S. Patent No. 9,529,888 - System and method for efficiently providing media and associated metadata." Patent assigned to Spotify (Date Accessed 05/10/2018), available at https://patentimages.storage.googleapis.com/88/d4/11/6b1fc7c1e09e6b/US9529888.pdf (emphasis added) *Thus, this claim element is infringed literally, or in the alternative under the doctrine of equivalents.*

CLAIM 6	SPOTIFY
selecting a scrambling technique to apply to the digital content;	*The digital content is encrypted using a scrambling technique (here **Encrypted Media Extensions (EME)**) before transmission from Party 1 to Party 2 so that it is not compromised or deciphered by an unauthorized user. The package's encrypted content will have a unique license identification information which can be only decrypted using a proper key.* "We **consume movies and music through services like** Netflix, **Spotify**, Pandora, Apple Music, etc., **often over the web**. **Netflix, et al. are obligated, due to agreements with content partners, to serve their content with DRM.** Moreover, web streaming is likely a significant chunk of usage for Netflix. This makes **the problem of enforcing DRM over the web an incredibly important problem for Netflix, et al. to solve**. That's where **EMEs come into play**. They are essentially **a technology that allows the browser to communicate with DRM systems over an encrypted medium.** They **make it possible for DRM software to work over the browser and relay encrypted content** to the user. This means **Netflix can serve you a movie that's encrypted and protected by DRM**." *See* Exhibit 6, p. 2, "The most controversial HTML5 extension – LogRocket" blog post (Date Accessed 05/01/2018), available at https://blog.logrocket.com/the-most-controversial-html5-extension-7adc66bbc291 (emphasis added)

CLAIM 6	SPOTIFY
selecting a scrambling technique to apply to the digital content;	"Say **Felix is a movie streaming service that serves up movies over the browser and uses EMEs to protect the content it delivers**. Suppose that user wants to play some encrypted content from Felix. Here's what happens: **The browser will load up this content, realize it is encrypted and then trigger some Javascript code**. This **Javascript will take the encrypted content and pass it along to something called the Content Decryption Module (CDM)**—more on this later. **The CDM will then trigger a request that will be relayed by Felix to the license server**. This is a Felix-controlled server that determines whether or not a particular user is allowed to play a particular piece of content. **If the license server thinks our user can watch the content, it will send back a decryption key for the content to the CDM**. **The CDM will then decrypt the content and it will begin playing for the user**." The most important **chunk of this whole process is the CDM**. By its nature, the **CDM has to be a piece of code that's trusted by Felix**. If it isn't, Felix can't be sure that it will do what it wants it to. This means that the **CDM has to come with the browser**. There are a couple of different providers for CDMs, including **Google's Widevine** and Adobe Primetime. Both of these provide the **encryption support necessary for content providers such as Felix to enforce DRM**. *See* Exhibit 6, p. 2 & 3, "The most controversial HTML5 extension – LogRocket" blog post (Date Accessed 05/01/2018), available at https://blog.logrocket.com/the-most-controversial-html5-extension-7adc66bbc291 (emphasis added)

CLAIM 6	SPOTIFY
selecting a scrambling technique to apply to the digital content;	**"Encrypted Media Extensions provides an API that enables web applications to interact with content protection systems, to allow playback of encrypted audio and video**. EME is designed to **enable the same app and encrypted files to be used in any browser, regardless of the underlying protection system**. The former is made possible by the standardized APIs and flow while the latter is made possible by the concept of Common Encryption EME is an extension to the HTMLMediaElement specification — hence the name. Being an 'extension' means that browser support for EME is optional: if a browser does not support encrypted media, it will not be able to play encrypted media, but EME is not required for HTML spec compliance "EME implementations use the following external components: **Key System: A content protection (DRM) mechanism. EME doesn't define Key Systems themselves, apart from Clear Key (more about that below)**. **Content Decryption Module (CDM): A client-side software or hardware mechanism that enables playback of encrypted media. As with Key Systems, EME doesn't define any CDMs, but provides an interface for applications to interact with CDMs that are available**. **License (Key) server: Interacts with a CDM to provide keys to decrypt media. Negotiation with the license server is the responsibility of the application**. *continued on next slide.*

CLAIM 6	SPOTIFY
selecting a scrambling technique to apply to the digital content;	**Packaging service: Encodes and encrypts media for distribution/consumption**. Note that an application **using EME interacts with a license server to get keys to enable decryption**, but user identity and authentication are not part of EME. **Retrieval of keys to enable media playback happens after (optionally) authenticating a user. Services such as Netflix must authenticate users within their web application**: **when a user signs into the application, the application determines the user's identity and privileges**." *See* Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added) "The **authorization flow we use in this tutorial is the Authorization Code Flow**. **This flow first gets a code from the Spotify Accounts Service, then exchanges that code for an access token**. The **code-to-token exchange requires a secret key, and for security is done through direct server-to-server communication**." *See* Exhibit 9, p. 1, "Web API Tutorial _ Spotify for Developers" webpage (Date Accessed 05/02/2018), available at https://beta.developer.spotify.com/documentation/web-api/quick-start/ (emphasis added)

CLAIM 6	SPOTIFY
selecting a scrambling technique to apply to the digital content;	"a **media delivery module 122 for sending (e.g., streaming) media content to a client device (e.g., client device 110-1)** remote from sever system 120-1 in response to the request from client device 110-1, media delivery module 122 including but not limited to: **an encoding module 318 for encoding media content prior to sending (e.g., streaming) the media content to client device** 110-1 or to other content sources for storage; **an encryption module 320 for encrypting one or more portions of media content prior to sending (e.g., streaming) the media content to client device** 110-1."  *See* Exhibit 30, at Col. 11:08-21 & Fig. 3, "U.S. Patent No. 9,529,888 - System and method for efficiently providing media and associated metadata." Patent assigned to Spotify (Date Accessed 05/10/2018), available at https://patentimages.storage.googleapis.com/88/d4/11/6b1fc7c1e09e6b/US9529888.pdf (emphasis added)

CLAIM 6	SPOTIFY
selecting a scrambling technique to apply to the digital content;	"How does EME Work?"

1. A web application attempts to play audio or video that has one or more encrypted streams.
2. The browser recognizes that the media is encrypted (see box below for how that happens) and fires an encrypted event with metadata (initData) obtained from the media about the encryption.
3. The application handles the encrypted event:
    a. If no MediaKeys object has been associated with the media element, first select an available Key System by using navigator.requestMediaKeySystemAccess() to check what Key Systems are available, then create a MediaKeys object for an available Key System via a MediaKeySystemAccess object. Note that initialization of the MediaKeys object should happen before the first encrypted event. Getting a license server URL is done by the app independently of selecting an available key system. A MediaKeys object represents all the keys available to decrypt the media for an audio or video element. It represents a CDM instance and provides access to the CDM, specifically for creating key sessions, which are used to obtain keys from a license server.
    b. Once the MediaKeys object has been created, assign it to the media element: setMediaKeys() associates the MediaKeys object with an HTMLMediaElement, so that its keys can be used during playback, i.e. during decoding.
4. The app creates a MediaKeySession by calling createSession() on the MediaKeys. This creates a MediaKeySession, which represents the lifetime of a license and its key(s).
5. The app generates a license request by passing the media data obtained in the encrypted handler to the CDM, by calling generateRequest() on the MediaKeySession.
6. The CDM fires a message event: a request to acquire a key from a license server.
7. The MediaKeySession object receives the message event and the application sends a message to the license server (via XHR, for example).
8. The application receives a response from the license server and passes the data to the CDM using the update() method of the MediaKeySession.
9. The CDM decrypts the media using the keys in the license. A valid key may be used, from any session within the MediaKeys associated with the media element. The CDM will access the key and policy, indexed by Key ID.

Media playback resumes.

How does the browser know that media is encrypted?

This information is in the metadata of the media container file, which will be in a format such as ISO BMFF or WebM. For ISO BMFF this means header metadata, called the protection scheme information box. WebM uses the Matroska ContentEncryption element, with some WebM-specific additions. Guidelines are provided for each container in an EME-specific registry.

Note that there may be multiple messages between the CDM and the license server, and all communication in this process is opaque to the browser and application: messages are only understood by the CDM and license server, although the app layer can see what type of message (https://w3c.github.io/encrypted-media/#idl-def-MediaKeyMessageType) the CDM is sending. The license request contains proof of the CDM's validity (and trust relationship) as well as a key to use when encrypting the content key(s) in the resulting license.

See Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added)

Thus, this claim element is infringed literally, or in the alternative under the doctrine of equivalents.

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	*The data is scrambled (through **Encrypted Media Extensions (EME)**) before transmission from Party 1 to Party 2 so that it is not compromised or deciphered by an unauthorized user. The package's encrypted content will have a unique license identification information which can be only decrypted using a proper key. Without the key, the music is available at a perceptible degraded level (lower bitrate) than if accessed through Spotify Premium.* "We **consume movies and music through services like** Netflix, **Spotify**, Pandora, Apple Music, etc., **often over the web**. **Netflix, et al. are obligated, due to agreements with content partners, to serve their content with DRM.** Moreover, web streaming is likely a significant chunk of usage for Netflix. This makes **the problem of enforcing DRM over the web an incredibly important problem for Netflix, et al. to solve**. That's where **EMEs come into play**. They are essentially **a technology that allows the browser to communicate with DRM systems over an encrypted medium.** They **make it possible for DRM software to work over the browser and relay encrypted content** to the user. This means **Netflix can serve you a movie that's encrypted and protected by DRM**." *See* Exhibit 6, p. 2, "The most controversial HTML5 extension – LogRocket" blog post (Date Accessed 05/01/2018), available at https://blog.logrocket.com/the-most-controversial-html5-extension-7adc66bbc291 (emphasis added).

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	"Say **Felix is a movie streaming service that serves up movies over the browser and uses EMEs to protect the content it delivers**. Suppose that user wants to play some encrypted content from Felix. Here's what happens: **The browser will load up this content, realize it is encrypted and then trigger some Javascript code**. This **Javascript will take the encrypted content and pass it along to something called the Content Decryption Module (CDM)**—more on this later. **The CDM will then trigger a request that will be relayed by Felix to the license server**. This is a Felix-controlled server that determines whether or not a particular user is allowed to play a particular piece of content. **If the license server thinks our user can watch the content, it will send back a decryption key for the content to the CDM**. **The CDM will then decrypt the content and it will begin playing for the user**." The most important **chunk of this whole process is the CDM**. By its nature, the **CDM has to be a piece of code that's trusted by Felix**. If it isn't, Felix can't be sure that it will do what it wants it to. This means that the **CDM has to come with the browser**. There are a couple of different providers for CDMs, including **Google's Widevine** and Adobe Primetime. Both of these provide the **encryption support necessary for content providers such as Felix to enforce DRM**. *See* Exhibit 6, p. 2 & 3, "The most controversial HTML5 extension – LogRocket" blog post (Date Accessed 05/01/2018), available at https://blog.logrocket.com/the-most-controversial-html5-extension-7adc66bbc291 (emphasis added).

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	**"Encrypted Media Extensions provides an API that enables web applications to interact with content protection systems, to allow playback of encrypted audio and video**. EME is designed to **enable the same app and encrypted files to be used in any browser, regardless of the underlying protection system**. The former is made possible by the standardized APIs and flow while the latter is made possible by the concept of Common Encryption EME is an extension to the HTMLMediaElement specification — hence the name. Being an 'extension' means that browser support for EME is optional: if a browser does not support encrypted media, it will not be able to play encrypted media, but EME is not required for HTML spec compliance "EME implementations use the following external components: **Key System: A content protection (DRM) mechanism. EME doesn't define Key Systems themselves, apart from Clear Key (more about that below)**. **Content Decryption Module (CDM): A client-side software or hardware mechanism that enables playback of encrypted media. As with Key Systems, EME doesn't define any CDMs, but provides an interface for applications to interact with CDMs that are available**. **License (Key) server: Interacts with a CDM to provide keys to decrypt media. Negotiation with the license server is the responsibility of the application**. *continued on next slide.*

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	**Packaging service: Encodes and encrypts media for distribution/consumption**. Note that an application **using EME interacts with a license server to get keys to enable decryption**, but user identity and authentication are not part of EME. **Retrieval of keys to enable media playback happens after (optionally) authenticating a user. Services such as Netflix must authenticate users within their web application**: **when a user signs into the application, the application determines the user's identity and privileges**." *See* Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added). "The **authorization flow we use in this tutorial is the Authorization Code Flow**. **This flow first gets a code from the Spotify Accounts Service, then exchanges that code for an access token**. The **code-to-token exchange requires a secret key, and for security is done through direct server-to-server communication**." *See* Exhibit 9, p. 1, "Web API Tutorial _ Spotify for Developers" webpage (Date Accessed 05/02/2018), available at https://beta.developer.spotify.com/documentation/web-api/quick-start/ (emphasis added).

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	"How does EME Work?"

1. A web application attempts to play audio or video that has one or more encrypted streams.
2. The browser recognizes that the media is encrypted (see box below for how that happens) and fires an encrypted event with metadata (initData) obtained from the media about the encryption.
3. The application handles the encrypted event:
    a. If no MediaKeys object has been associated with the media element, first select an available Key System by using navigator.requestMediaKeySystemAccess() to check what Key Systems are available, then create a MediaKeys object for an available Key System via a MediaKeySystemAccess object. Note that initialization of the MediaKeys object should happen before the first encrypted event. Getting a license server URL is done by the app independently of selecting an available key system. A MediaKeys object represents all the keys available to decrypt the media for an audio or video element. It represents a CDM instance and provides access to the CDM, specifically for creating key sessions, which are used to obtain keys from a license server.
    b. Once the MediaKeys object has been created, assign it to the media element: setMediaKeys() associates the MediaKeys object with an HTMLMediaElement, so that its keys can be used during playback, i.e. during decoding.
4. The app creates a MediaKeySession by calling createSession() on the MediaKeys. This creates a MediaKeySession, which represents the lifetime of a license and its key(s).
5. The app generates a license request by passing the media data obtained in the encrypted handler to the CDM, by calling generateRequest() on the MediaKeySession.
6. The CDM fires a message event: a request to acquire a key from a license server.
7. The MediaKeySession object receives the message event and the application sends a message to the license server (via XHR, for example).
8. The application receives a response from the license server and passes the data to the CDM using the update() method of the MediaKeySession.
9. The CDM decrypts the media using the keys in the license. A valid key may be used, from any session within the MediaKeys associated with the media element. The CDM will access the key and policy, indexed by Key ID.

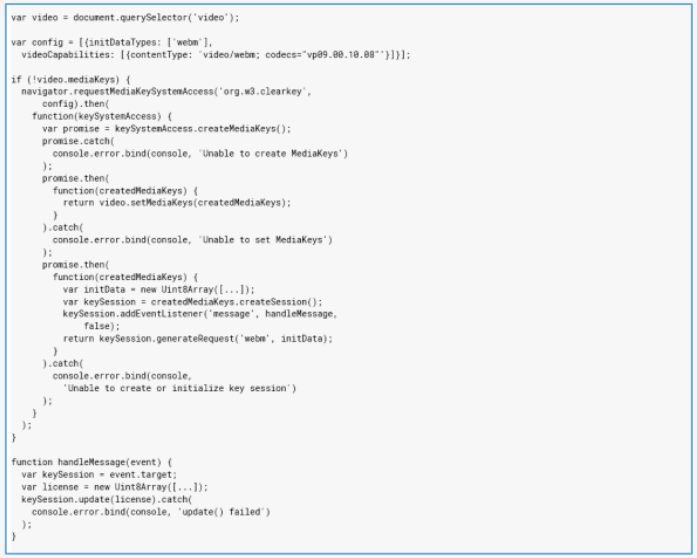
Media playback resumes.

How does the browser know that media is encrypted?

This information is in the metadata of the media container file, which will be in a format such as ISO BMFF or WebM. For ISO BMFF this means header metadata, called the protection scheme information box. WebM uses the Matroska ContentEncryption element, with some WebM-specific additions. Guidelines are provided for each container in an EME-specific registry.

Note that there may be multiple messages between the CDM and the license server, and all communication in this process is opaque to the browser and application: messages are only understood by the CDM and license server, although the app layer can see what type of message (https://w3c.github.io/encrypted-media/#idl-def-MediaKeyMessageType) the CDM is sending. The license request contains proof of the CDM's validity (and trust relationship) as well as a key to use when encrypting the content key(s) in the resulting license.

See Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added).

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	*Upon information and belief, Spotify works similarly utilizing the CDM module as explained here.* "**Getting a key from a license server** In typical commercial use, **content will be encrypted and encoded using a packaging service or tool**. **Once the encrypted media is made available online, a web client can obtain a key (contained within a license) from a license server and use the key to enable decryption and playback of the content**. The following code (adapted from the spec examples) shows **how an application can select an appropriate key system and obtain a key from a license server**."  *See* Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added).

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	"There are **two basic ways you can authenticate your application's user and pass the scopes needed to get authorization to access user data**: The preferred and highly recommended way: **Use the Spotify client to authenticate the user (with a fallback to login through a WebView).** If Spotify is installed on the device, **SDK connects to the Spotify client and uses current session. If Spotify is not installed, this method will fall back to using Android WebView class which allows you to display a web page as part of your activity layout. Authentication and authorization takes place in the WebView without leaving the application**. Only if the first way is not possible: **Login through a web browser. This method opens the Spotify Accounts page in a separate, external browser window, completes the authentication process, and then redirects back to your application**." *See* Exhibit 10, p. 1, "Android SDK Authentication Guide _ Spotify for Developers" webpage (Date Accessed 05/02/2018), available at https://beta.developer.spotify.com/documentation/android-sdk/guides/android-authentication/ (emphasis added).

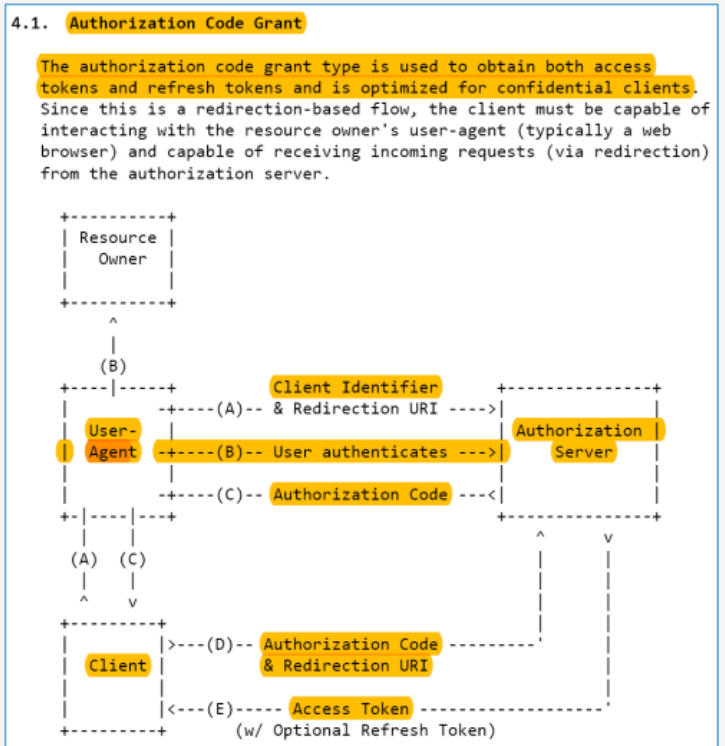
CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	""Single **Sign-On with Spotify Client** and a WebView Fallback In this flow, **the Android SDK will try to fetch the authorization code/access token using the Spotify Android client**. Note: to be able to use Single Sign-On you need to register your application's fingerprint. Please see Registering Application Fingerprint section of the tutorial. **If Spotify is installed on the device, the SDK will connect to the Spotify client and fetch the authorization code/access token for current user.** Since the user is already logged into Spotify, they don't need to type in their username and password. If the SDK application requests scopes that have not been approved before, the user will see a list of scopes and will need to accept them. If **Spotify is not installed on the device, the SDK will fallback to the WebView based authorization and open the Spotify Accounts login page at https://accounts.spotify.com in a native WebView**. User will have to enter their username and password to login to Spotify and accept the supplied scopes. In both cases **the result of the authorization flow will be returned in the onActivityResult method of the activity that initiated it**. This flow is entirely completed within the application; there is no need to open a web browser." *See* Exhibit 10, p. 2, "Android SDK Authentication Guide _ Spotify for Developers" webpage (Date Accessed 05/02/2018), available at https://beta.developer.spotify.com/documentation/android-sdk/guides/android-authentication/ (emphasis added).

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	"6. **Audio Quality: 160Kbps VS 320Kbps** On desktop, **default streaming audio quality for Spotify Free users is Ogg Vorbis 160kbit/s while Premium subscribers can choose to switch on High quality streaming, which uses 320kbit/s.** On iPhone, iPad or Android, Spotify Free users can choose either 96kbit/s or 160kbit/s while Premium subscribers have one more option which is 320kbit/s. As to streaming audio quality on Chromecast, it's AAC 128kbit/s for Spotify Free, and 256kbit/s for Spotify Premium." *See* Exhibit 27, p. 5, "Spotify Free VS Premium_ 6 Differences You Need to Know" webpage (Date Accessed 05/08/2018), available at http://www.tunemobie.com/resources/spotify-free-vs-premium-6-differences.html (emphasis added) **"AUDIO QUALITY** **Spotify uses three different quality settings for streaming, all in the Ogg Vorbis format. 96kbps is the standard bitrate for mobile, which then jumps to 160kbps for desktop and web player 'standard quality' and 'high quality' on mobile**. If you **pay the monthly fee for Spotify Premium, you'll get 320kbps which is 'high quality' on desktop and 'extreme quality' on mobile**." *See* Exhibit 28, p. 3, "Spotify Free vs Spotify Premium - Tech Advisor" webpage (Date Accessed 05/08/2018), available at https://www.techadvisor.co.uk/review/audio-and-music-software/spotify-free-vs-spotify-premium-3597766/ (emphasis added)

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	*Spotify complies with RFC 6749 standard for authorization code flow*

4.1. Authorization Code Grant

The authorization code grant type is used to obtain both access tokens and refresh tokens and is optimized for confidential clients. Since this is a redirection-based flow, the client must be capable of interacting with the resource owner's user-agent (typically a web browser) and capable of receiving incoming requests (via redirection) from the authorization server.

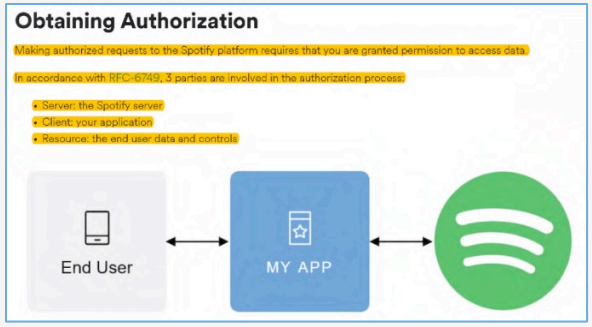
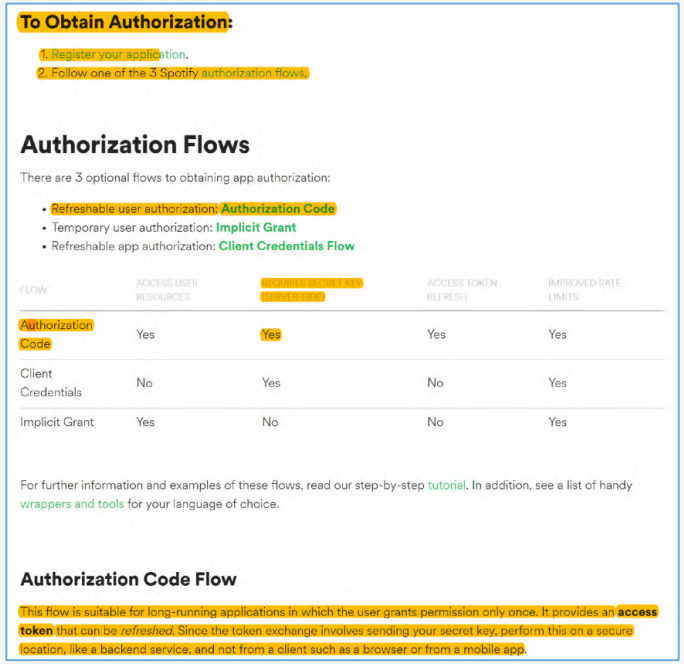


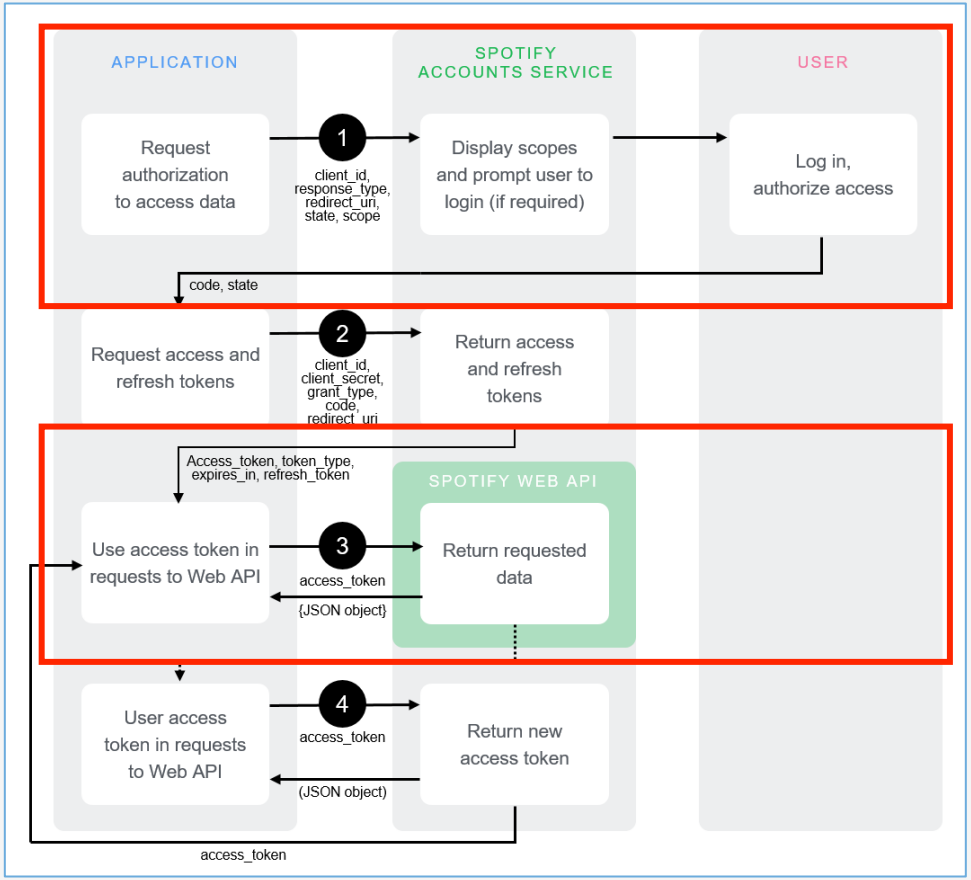
Note: The lines illustrating steps (A), (B), and (C) are broken into two parts as they pass through the user-agent.

Figure 3: Authorization Code Flow

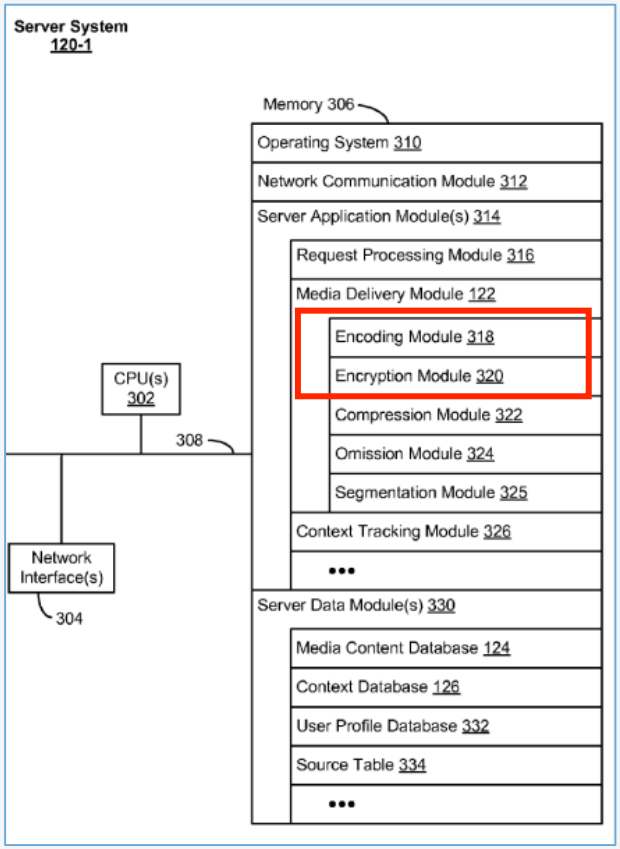
See Exhibit 14, p. 24, "RFC 6749 - The OAuth 2.0 Authorization Framework" webpage (Date Accessed 05/01/2018), available at https://tools.ietf.org/html/rfc6749#section-4.1 (emphasis added)

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	"The flow illustrated in Figure 3 includes the following steps: (A) The **client initiates the flow by directing the resource owner's user-agent to the authorization endpoint**. The **client includes its client identifier, requested scope, local state, and a redirection URI to which the authorization server will send the user-agent back once access is granted** (or denied). (B) The **authorization server authenticates the resource owner** (via the user-agent) and establishes whether the resource owner grants or denies the client's access request. (C) Assuming the resource owner grants access, **the authorization server redirects the user-agent back to the client using the redirection URI provided earlier** (in the request or during client registration). The redirection URI includes an authorization code and any local state provided by the client earlier. (D) The **client requests an access token from the authorization server's token endpoint by including the authorization code received in the previous** step. When making the request, the client authenticates with the authorization server. **The client includes the redirection URI used to obtain the authorization code for verification**. (E) The **authorization server authenticates the client, validates the authorization code, and ensures that the redirection URI received matches the URI used to redirect the client in step (C)**. If valid, **the authorization server responds back with an access token** and, optionally, a refresh token." *See* Exhibit 14, p. 25, "RFC 6749 - The OAuth 2.0 Authorization Framework" webpage (Date Accessed 05/01/2018), available at https://tools.ietf.org/html/rfc6749#section-4.1 (emphasis added)

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	  *See* Exhibit 11, p. 1-3, "Authorization Guide _ Spotify for Developers" webpage (Date Accessed 05/03/2018), available at https://beta.developer.spotify.com/documentation/general/guides/authorization-guide/ (emphasis added).

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	

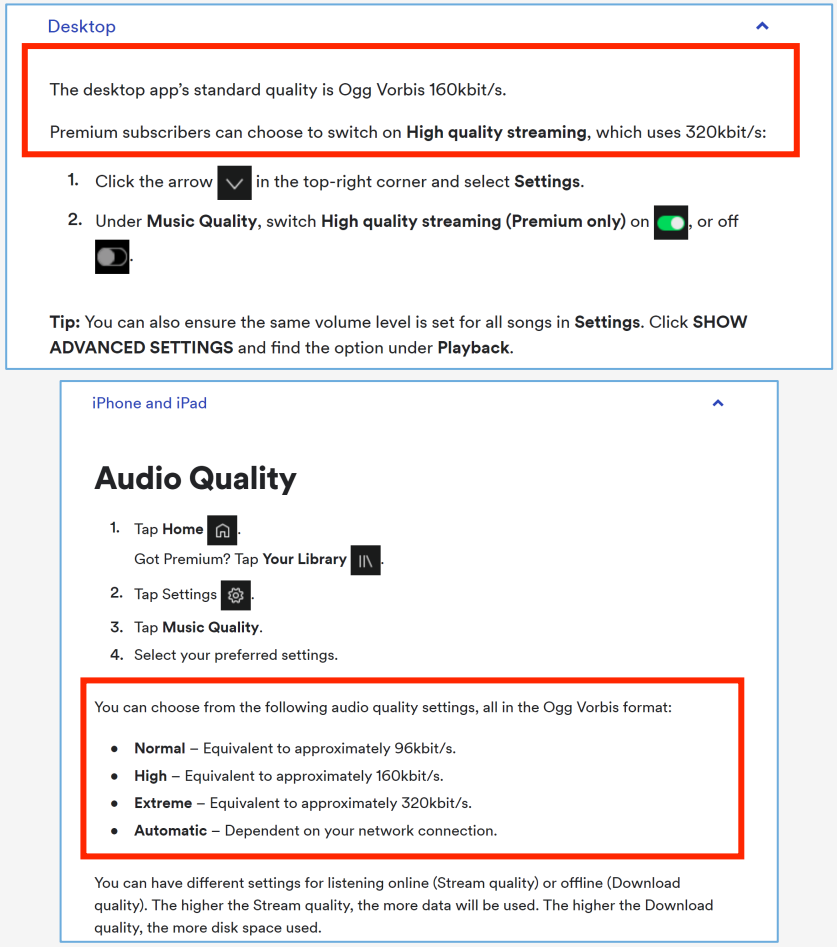
See Exhibit 11, p. 4, "Authorization Guide _ Spotify for Developers" webpage (Date Accessed 05/03/2018), available at https://beta.developer.spotify.com/documentation/general/guides/authorization-guide/ (emphasis added)

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	

See Exhibit 30, at Fig. 3, "U.S. Patent No. 9,529,888 - System and method for efficiently providing media and associated metadata." Patent assigned to Spotify (Date Accessed 05/10/2018), available at https://patentimages.storage.googleapis.com/88/d4/11/6b1fc7c1e09e6b/US9529888.pdf (emphasis added)

CLAIM 6	SPOTIFY
scrambling the digital content using a predetermined key resulting in perceptibly degraded digital content	"a **media delivery module 122 for sending (e.g., streaming) media content to a client device (e.g., client device 110-1)** remote from sever system 120-1 in response to the request from client device 110-1, media delivery module 122 including but not limited to: **an encoding module 318 for encoding media content prior to sending (e.g., streaming) the media content to client device** 110-1 or to other content sources for storage; **an encryption module 320 for encrypting one or more portions of media content prior to sending (e.g., streaming) the media content to client device** 110-1. **a compression module 322 for compressing media content prior to sending (e.g., streaming) the media content to client device** 110-1; an **omission module 324 for omitting information from media content** prior sending (e.g., streaming) the media content to client device 110-1 (e.g., by determining redundant **information that can be omitted when compressing the media content while maintaining a quality of the media content above a predefined quality level)**; and" *See* Exhibit 30, at Col. 11:08-32, "U.S. Patent No. 9,529,888 - System and method for efficiently providing media and associated metadata." Patent assigned to Spotify (Date Accessed 05/10/2018), available at https://patentimages.storage.googleapis.com/88/d4/11/6b1fc7c1e09e6b/US9529888.pdf (emphasis added) *Thus, this claim element is infringed literally, or in the alternative under the doctrine of equivalents.*

CLAIM 6	SPOTIFY
wherein the scrambling technique is based on a plurality of predetermined criteria including at least the criteria of reaching a desired signal quality level for the digital content; and	*Upon information and belief, Spotify scrambles the data according to the requested user's status i.e. if the user is a free customer under "Spotify Free", the digital content signal quality is predetermined from 96 Kbps bitrate to 160 Kbps bitrate. Likewise, for a "Spotify Premium" user, the content is available at a higher quality level.* "6. **Audio Quality: 160Kbps VS 320Kbps** On desktop, **default streaming audio quality for Spotify Free users is Ogg Vorbis 160kbit/s while Premium subscribers can choose to switch on High quality streaming, which uses 320kbit/s.** On iPhone, iPad or Android, Spotify Free users can choose either 96kbit/s or 160kbit/s while Premium subscribers have one more option which is 320kbit/s. As to streaming audio quality on Chromecast, it's AAC 128kbit/s for Spotify Free, and 256kbit/s for Spotify Premium." *See* Exhibit 27, p. 5, "Spotify Free VS Premium_ 6 Differences You Need to Know" webpage (Date Accessed 05/08/2018), available at http://www.tunemobie.com/resources/spotify-free-vs-premium-6-differences.html (emphasis added) **"AUDIO QUALITY** **Spotify uses three different quality settings for streaming, all in the Ogg Vorbis format. 96kbps is the standard bitrate for mobile, which then jumps to 160kbps for desktop and web player 'standard quality' and 'high quality' on mobile**. If you **pay the monthly fee for Spotify Premium, you'll get 320kbps which is 'high quality' on desktop and 'extreme quality' on mobile**." *See* Exhibit 28, p. 3, "Spotify Free vs Spotify Premium - Tech Advisor" webpage (Date Accessed 05/08/2018), available at https://www.techadvisor.co.uk/review/audio-and-music-software/spotify-free-vs-spotify-premium-3597766/ (emphasis added)

CLAIM 6	SPOTIFY
wherein the scrambling technique is based on a plurality of predetermined criteria including at least the criteria of reaching a desired signal quality level for the digital content; and	

See Exhibit 29, p. 1, "Audio settings - Spotify" webpage (Date Accessed 05/08/2018), available at https://support.spotify.com/is/article/high-quality-streaming/?ref=related

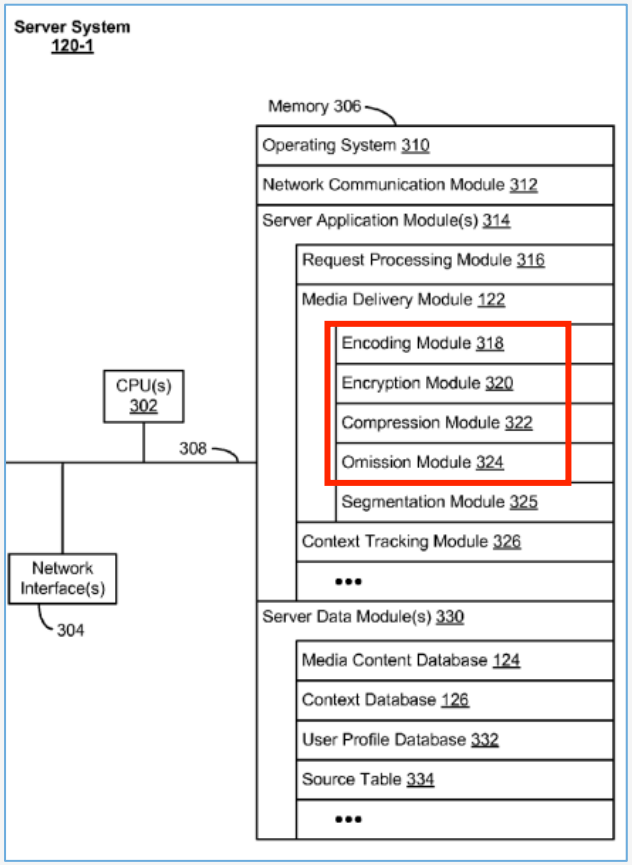
CLAIM 6	SPOTIFY
wherein the scrambling technique is based on a plurality of predetermined criteria including at least the criteria of reaching a desired signal quality level for the digital content; and	"**If you don't like the songs it plays on shuffle mode, you may find yourself wishing you had a Premium account**. **Only premium users get unlimited skips** so they can breeze by songs they don't like. Also, **Spotify Premium users don't hear the ads that the service peppers throughout its Free tier.** That might not be a big deal if you're the only one listening, but if you want to run a party's tunes through Spotify, you might find yourself explaining to guests why they're hearing a car insurance ad between jams." "Special features: How much do the little things matter? Next, **Spotify's non-paying users can't save songs to their devices for when they're offline**. That's a huge perk for those who don't want to run up their mobile data bill or find themselves in regions without cellular service. If you've got nice headphones or a discerning ear, you might prefer **Spotify Premium for its high quality audio option. Thats because its 320 kbps audio bitrate, a level that experts claim is indistinguishable from CD quality, isn't found in the free version, and only available to Premium users**." *See* Exhibit 13, p. 2 & 3, "Spotify Free vs Premium_ Should You Pay to Play_Tomsguide" webpage (Date Accessed 05/03/2018), available at https://www.tomsguide.com/us/spotify-free-vs-premium,news-24850.html

CLAIM 6	SPOTIFY
wherein the scrambling technique is based on a plurality of predetermined criteria including at least the criteria of reaching a desired signal quality level for the digital content; and	"Say **Felix is a movie streaming service that serves up movies over the browser and uses EMEs to protect the content it delivers**. Suppose that user wants to play some encrypted content from Felix. Here's what happens: **The browser will load up this content, realize it is encrypted and then trigger some Javascript code**. This **Javascript will take the encrypted content and pass it along to something called the Content Decryption Module (CDM)**—more on this later. **The CDM will then trigger a request that will be relayed by Felix to the license server**. This is a Felix-controlled server that determines whether or not a particular user is allowed to play a particular piece of content. **If the license server thinks our user can watch the content, it will send back a decryption key for the content to the CDM**. **The CDM will then decrypt the content and it will begin playing for the user**." The most important **chunk of this whole process is the CDM**. By its nature, the **CDM has to be a piece of code that's trusted by Felix**. If it isn't, Felix can't be sure that it will do what it wants it to. This means that the **CDM has to come with the browser**. There are a couple of different providers for CDMs, including **Google's Widevine** and Adobe Primetime. Both of these provide the **encryption support necessary for content providers such as Felix to enforce DRM**. *See* Exhibit 6, p. 2 & 3, "The most controversial HTML5 extension – LogRocket" blog post (Date Accessed 05/01/2018), available at https://blog.logrocket.com/the-most-controversial-html5-extension-7adc66bbc291 (emphasis added)

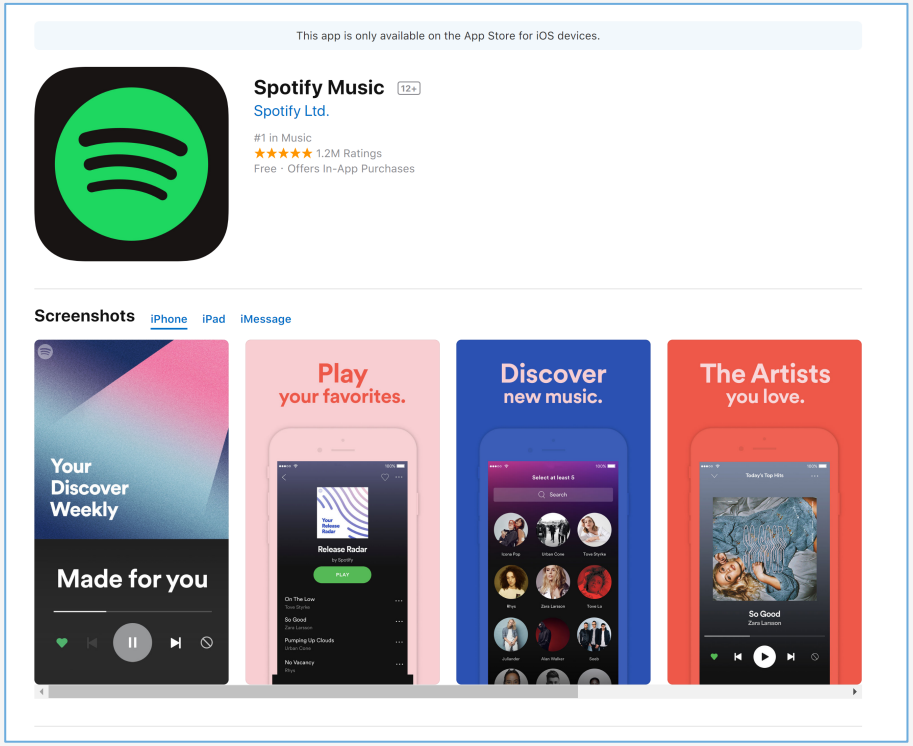
CLAIM 6	SPOTIFY
wherein the scrambling technique is based on a plurality of predetermined criteria including at least the criteria of reaching a desired signal quality level for the digital content; and	**"Encrypted Media Extensions provides an API that enables web applications to interact with content protection systems, to allow playback of encrypted audio and video**. EME is designed to **enable the same app and encrypted files to be used in any browser, regardless of the underlying protection system**. The former is made possible by the standardized APIs and flow while the latter is made possible by the concept of Common Encryption EME is an extension to the HTMLMediaElement specification — hence the name. Being an 'extension' means that browser support for EME is optional: if a browser does not support encrypted media, it will not be able to play encrypted media, but EME is not required for HTML spec compliance "EME implementations use the following external components: **Key System: A content protection (DRM) mechanism. EME doesn't define Key Systems themselves, apart from Clear Key (more about that below)**. **Content Decryption Module (CDM): A client-side software or hardware mechanism that enables playback of encrypted media. As with Key Systems, EME doesn't define any CDMs, but provides an interface for applications to interact with CDMs that are available**. **License (Key) server: Interacts with a CDM to provide keys to decrypt media. Negotiation with the license server is the responsibility of the application**. *continued on next slide.*

CLAIM 6	SPOTIFY
wherein the scrambling technique is based on a plurality of predetermined criteria including at least the criteria of reaching a desired signal quality level for the digital content; and	**Packaging service: Encodes and encrypts media for distribution/consumption**. Note that an application **using EME interacts with a license server to get keys to enable decryption**, but user identity and authentication are not part of EME. **Retrieval of keys to enable media playback happens after (optionally) authenticating a user. Services such as Netflix must authenticate users within their web application**: **when a user signs into the application, the application determines the user's identity and privileges**." *See* Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added) "The **authorization flow we use in this tutorial is the Authorization Code Flow**. **This flow first gets a code from the Spotify Accounts Service, then exchanges that code for an access token**. The **code-to-token exchange requires a secret key, and for security is done through direct server-to-server communication**." *See* Exhibit 9, p. 1, "Web API Tutorial _ Spotify for Developers" webpage (Date Accessed 05/02/2018), available at https://beta.developer.spotify.com/documentation/web-api/quick-start/ (emphasis added)

CLAIM 6	SPOTIFY
wherein the scrambling technique is based on a plurality of predetermined criteria including at least the criteria of reaching a desired signal quality level for the digital content; and	"a **media delivery module 122 for sending (e.g., streaming) media content to a client device (e.g., client device 110-1)** remote from sever system 120-1 in response to the request from client device 110-1, media delivery module 122 including but not limited to: **an encoding module 318 for encoding media content prior to sending (e.g., streaming) the media content to client device** 110-1 or to other content sources for storage; **an encryption module 320 for encrypting one or more portions of media content prior to sending (e.g., streaming) the media content to client device** 110-1. **a compression module 322 for compressing media content prior to sending (e.g., streaming) the media content to client device** 110-1; an **omission module 324 for omitting information from media content** prior sending (e.g., streaming) the media content to client device 110-1 (e.g., by determining redundant **information that can be omitted when compressing the media content while maintaining a quality of the media content above a predefined quality level)**; and" *See* Exhibit 30, at Col. 11:08-32, "U.S. Patent No. 9,529,888 - System and method for efficiently providing media and associated metadata." Patent assigned to Spotify (Date Accessed 05/10/2018), available at https://patentimages.storage.googleapis.com/88/d4/11/6b1fc7c1e09e6b/US9529888.pdf (emphasis added)

CLAIM 6	SPOTIFY
wherein the scrambling technique is based on a plurality of predetermined criteria including at least the criteria of reaching a desired signal quality level for the digital content; and	 *See* Exhibit 30, at Col. 11:08-32 & Fig. 3, "U.S. Patent No. 9,529,888 - System and method for efficiently providing media and associated metadata." Patent assigned to Spotify (Date Accessed 05/10/2018), available at https://patentimages.storage.googleapis.com/88/d4/11/6b1fc7c1e09e6b/US9529888.pdf (emphasis added) *Thus, this claim element is infringed literally, or in the alternative under the doctrine of equivalents.*

CLAIM 6	SPOTIFY
distributing the scrambled digital content.	*Spotify Application (Android, iOS, Windows) distributes the scrambled content (encrypted Music stream) which can be played only through the application.*



See Exhibit 22, p. 1, "Spotify Music on the App Store" webpage (Date Accessed 05/03/2018), available at https://itunes.apple.com/us/app/spotify-music/id324684580?mt=8

CLAIM 6	SPOTIFY
distributing the scrambled digital content.	"**Offline playlists are a Premium feature that allows you to download tracks onto your desktop or mobile device to play on a Spotify application**. However, this is somewhat different to purchased tracks. "Offline" allows you to store 3,333 tracks. **These are stored in an encrypted format, that the Spotify application then decodes and plays as some lovely music**. Purchasing tracks from our Download Store will allow you to have DRM mp3's on your computer, allowing you to download it to 3-5 computers (depending on the record label). You can find out more information about our download store here - and more about Offline Playlists here" *See* Exhibit 16, p. 2, "What is 'offline' vs purchased music - The Spotify Community" webpage (Date Accessed 05/03/2018), available at https://community.spotify.com/t5/Accounts/What-is-offline-vs-purchased-music/td-p/17603 (emphasis added)

CLAIM 6	SPOTIFY
distributing the scrambled digital content.	"Say **Felix is a movie streaming service that serves up movies over the browser and uses EMEs to protect the content it delivers**. Suppose that user wants to play some encrypted content from Felix. Here's what happens: **The browser will load up this content, realize it is encrypted and then trigger some Javascript code**. This **Javascript will take the encrypted content and pass it along to something called the Content Decryption Module (CDM)**—more on this later. **The CDM will then trigger a request that will be relayed by Felix to the license server**. This is a Felix-controlled server that determines whether or not a particular user is allowed to play a particular piece of content. **If the license server thinks our user can watch the content, it will send back a decryption key for the content to the CDM**. **The CDM will then decrypt the content and it will begin playing for the user**." The most important **chunk of this whole process is the CDM**. By its nature, the **CDM has to be a piece of code that's trusted by Felix**. If it isn't, Felix can't be sure that it will do what it wants it to. This means that the **CDM has to come with the browser**. There are a couple of different providers for CDMs, including **Google's Widevine** and Adobe Primetime. Both of these provide the **encryption support necessary for content providers such as Felix to enforce DRM**. *See* Exhibit 6, p. 2 & 3, "The most controversial HTML5 extension – LogRocket" blog post (Date Accessed 05/01/2018), available at https://blog.logrocket.com/the-most-controversial-html5-extension-7adc66bbc291 (emphasis added)

CLAIM 6	SPOTIFY
distributing the scrambled digital content.	**"Encrypted Media Extensions provides an API that enables web applications to interact with content protection systems, to allow playback of encrypted audio and video**. EME is designed to **enable the same app and encrypted files to be used in any browser, regardless of the underlying protection system**. The former is made possible by the standardized APIs and flow while the latter is made possible by the concept of Common Encryption EME is an extension to the HTMLMediaElement specification — hence the name. Being an 'extension' means that browser support for EME is optional: if a browser does not support encrypted media, it will not be able to play encrypted media, but EME is not required for HTML spec compliance "EME implementations use the following external components: **Key System: A content protection (DRM) mechanism. EME doesn't define Key Systems themselves, apart from Clear Key (more about that below)**. **Content Decryption Module (CDM): A client-side software or hardware mechanism that enables playback of encrypted media. As with Key Systems, EME doesn't define any CDMs, but provides an interface for applications to interact with CDMs that are available**. **License (Key) server: Interacts with a CDM to provide keys to decrypt media. Negotiation with the license server is the responsibility of the application**. *continued on next slide.*

CLAIM 6	SPOTIFY
distributing the scrambled digital content.	**Packaging service: Encodes and encrypts media for distribution/consumption**. Note that an application **using EME interacts with a license server to get keys to enable decryption**, but user identity and authentication are not part of EME. **Retrieval of keys to enable media playback happens after (optionally) authenticating a user. Services such as Netflix must authenticate users within their web application**: **when a user signs into the application, the application determines the user's identity and privileges**." *See* Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added) "The **authorization flow we use in this tutorial is the Authorization Code Flow**. **This flow first gets a code from the Spotify Accounts Service, then exchanges that code for an access token**. The **code-to-token exchange requires a secret key, and for security is done through direct server-to-server communication**." *See* Exhibit 9, p. 1, "Web API Tutorial _ Spotify for Developers" webpage (Date Accessed 05/02/2018), available at https://beta.developer.spotify.com/documentation/web-api/quick-start/ (emphasis added)

CLAIM 6	SPOTIFY
distributing the scrambled digital content.	"How does EME Work?"

1. A web application attempts to play audio or video that has one or more encrypted streams.
2. The browser recognizes that the media is encrypted (see box below for how that happens) and fires an encrypted event with metadata (initData) obtained from the media about the encryption.
3. The application handles the encrypted event:
    a. If no MediaKeys object has been associated with the media element, first select an available Key System by using navigator.requestMediaKeySystemAccess() to check what Key Systems are available, then create a MediaKeys object for an available Key System via a MediaKeySystemAccess object. Note that initialization of the MediaKeys object should happen before the first encrypted event. Getting a license server URL is done by the app independently of selecting an available key system. A MediaKeys object represents all the keys available to decrypt the media for an audio or video element. It represents a CDM instance and provides access to the CDM, specifically for creating key sessions, which are used to obtain keys from a license server.
    b. Once the MediaKeys object has been created, assign it to the media element: setMediaKeys() associates the MediaKeys object with an HTMLMediaElement, so that its keys can be used during playback, i.e. during decoding.
4. The app creates a MediaKeySession by calling createSession() on the MediaKeys. This creates a MediaKeySession, which represents the lifetime of a license and its key(s).
5. The app generates a license request by passing the media data obtained in the encrypted handler to the CDM, by calling generateRequest() on the MediaKeySession.
6. The CDM fires a message event: a request to acquire a key from a license server.
7. The MediaKeySession object receives the message event and the application sends a message to the license server (via XHR, for example).
8. The application receives a response from the license server and passes the data to the CDM using the update() method of the MediaKeySession.
9. The CDM decrypts the media using the keys in the license. A valid key may be used, from any session within the MediaKeys associated with the media element. The CDM will access the key and policy, indexed by Key ID.

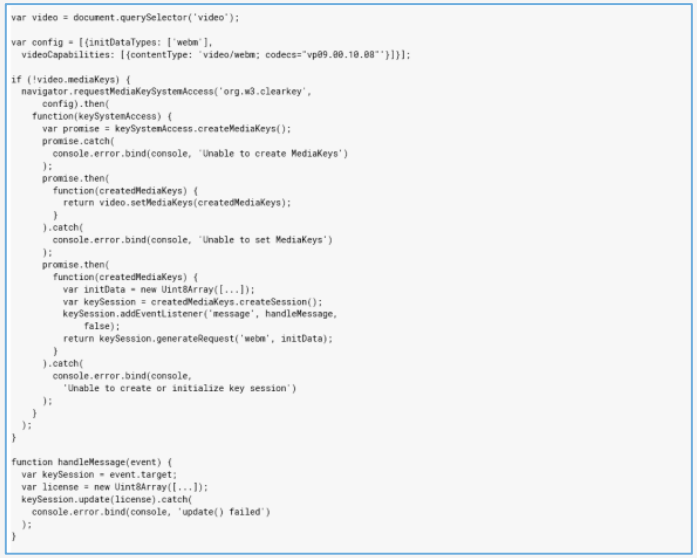
Media playback resumes.

How does the browser know that media is encrypted?

This information is in the metadata of the media container file, which will be in a format such as ISO BMFF or WebM. For ISO BMFF this means header metadata, called the protection scheme information box. WebM uses the Matroska ContentEncryption element, with some WebM-specific additions. Guidelines are provided for each container in an EME-specific registry.

Note that there may be multiple messages between the CDM and the license server, and all communication in this process is opaque to the browser and application: messages are only understood by the CDM and license server, although the app layer can see what type of message (https://w3c.github.io/encrypted-media/#idl-def-MediaKeyMessageType) the CDM is sending. The license request contains proof of the CDM's validity (and trust relationship) as well as a key to use when encrypting the content key(s) in the resulting license.

See Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added)

CLAIM 2	SPOTIFY
distributing the scrambled digital content.	*Upon information and belief, Spotify works similarly utilizing the CDM module as explained here.* "**Getting a key from a license server** In typical commercial use, **content will be encrypted and encoded using a packaging service or tool**. **Once the encrypted media is made available online, a web client can obtain a key (contained within a license) from a license server and use the key to enable decryption and playback of the content**. The following code (adapted from the spec examples) shows **how an application can select an appropriate key system and obtain a key from a license server**."  *See* Exhibit 8, p. 1, "What is EME_ _ Web Fundamentals _ Google Developers" forum page (Date Accessed 05/02/2018), available at https://developers.google.com/web/fundamentals/media/eme (emphasis added)

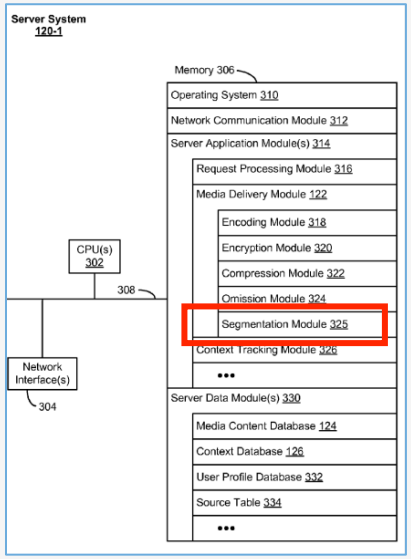
```
var video = document.querySelector('video');

var config = [{initDataTypes: ['webm'],
  videoCapabilities: [{contentType: 'video/webm; codecs="vp09.00.10.08"'}]}];

if (!video.mediaKeys) {
  navigator.requestMediaKeySystemAccess('org.w3.clearkey',
      config).then(
    function(keySystemAccess) {
      var promise = keySystemAccess.createMediaKeys();
      promise.catch(
        console.error.bind(console, 'Unable to create MediaKeys')
      );
      promise.then(
        function(createdMediaKeys) {
          return video.setMediaKeys(createdMediaKeys);
        }
      ).catch(
        console.error.bind(console, 'Unable to set MediaKeys')
      );
      promise.then(
        function(createdMediaKeys) {
          var initData = new Uint8Array([...]);
          var keySession = createdMediaKeys.createSession();
          keySession.addEventListener('message', handleMessage,
              false);
          return keySession.generateRequest('webm', initData);
        }
      ).catch(
        console.error.bind(console,
          'Unable to create or initialize key session')
      );
    }
  );
}

function handleMessage(event) {
  var keySession = event.target;
  var license = new Uint8Array([...]);
  keySession.update(license).catch(
    console.error.bind(console, 'update() failed')
  );
}
```

CLAIM 6	SPOTIFY
distributing the scrambled digital content.	"a **media delivery module 122 for sending (e.g., streaming) media content to a client device (e.g., client device 110-1)** remote from sever system 120-1 in response to the request from client device 110-1, media delivery module 122 including but not limited to: **an encoding module 318 for encoding media content prior to sending (e.g., streaming) the media content to client device** 110-1 or to other content sources for storage; **an encryption module 320 for encrypting one or more portions of media content prior to sending (e.g., streaming) the media content to client device** 110-1. a compression module 322 for compressing media content prior to sending (e.g., streaming) the media content to client device 110-1; an omission module 324 for omitting information from media content prior sending (e.g., streaming) the media content to client device 110-1 (e.g., by determining redundant information that can be omitted when compressing the media content while maintaining a quality of the media content above a predefined quality level); and *See* Exhibit 30, at Col. 11:08-32, "U.S. Patent No. 9,529,888 - System and method for efficiently providing media and associated metadata." Patent assigned to Spotify (Date Accessed 05/10/2018), available at https://patentimages.storage.googleapis.com/88/d4/11/6b1fc7c1e09e6b/US9529888.pdf (emphasis added) *continued on next slide.*

CLAIM 6	SPOTIFY
distributing the scrambled digital content.	"**a segmentation module 325 for dividing a media file or media content into one or more segments** and **distributing the one or more segments to one or more computing devices** (e.g., sources) in media delivery system 150 (e.g., distributing segments of the file to different peers in a P2P network so as to enable different segments of the file to be received from different peers and used to generate the media content at a receiving client); and"  *See* Exhibit 30, at Col. 11:08-32 & Fig. 3, "U.S. Patent No. 9,529,888 - System and method for efficiently providing media and associated metadata." Patent assigned to Spotify (Date Accessed 05/10/2018), available at https://patentimages.storage.googleapis.com/88/d4/11/6b1fc7c1e09e6b/US9529888.pdf (emphasis added) *Thus, this claim element is infringed literally, or in the alternative under the doctrine of equivalents.*